REMARKS

In the Office Action mailed January 14, 2004 the Examiner noted that claims 1-40 were pending, allowed claims 28-30, objected to claims 15, 18-21, and 24-27 and rejected claims 1-14, 16-17, 22-23 and 31-40. Claims 1, 6, 8, 10, 11, 15, 16, 18-21, 24, 26, 27 and 31 have been amended, new claim 41 has been added and, thus, in view of the forgoing claims 1-41 remain pending for reconsideration which is requested. No new matter has been added. The Examiner's rejections are traversed below.

On page 2 of the Office Action, the Examiner rejected claims 1-14, 16, 17, 22, 23 and 31-40 under 35 U.S.C. § 102 as anticipated by Danisch. In making this rejection the Examiner particularly pointed to col. 3, lines 29-33 and 45-58 as teaching a curve generation system producing a smooth tape curve using the relative positions of the flexible tape. These portions of Danisch particularly state:

> Fiber optic technology is convenient for use in sensors because it is robust, benign and inexpensive. A need exists for a fiber-optic based sensor system that can provide remote information on the locations of objects in space, the shape of surfaces and changes in the shape of surfaces. The present invention addresses such a need.

(See Danisch col. 3, lines 28-33)

> In one broad aspect, the invention is a shape and position measuring tool which comprises:
> (1) a flexible substrate having a longitudinal dimension;
> (2) spaced flexure sensors, attached to and positioned at known flexure sensor spacing intervals along the length of the substrate to provide signals indicating the local state of flexure present in the substrate at the locations where the flexure sensors are attached to the substrate; and
> (3) sensor data processing means coupled to the bend flexure sensors for receiving signals therefrom and for presenting data on the geometric configuration of the substrate
> wherein the sensor data processing means operates by extrapolating the geometric configuration of the substrate from the flexure signals provided by the flexure sensors and the spacing intervals between such sensors.

(See Danisch col. 3, lines 45-62)

This portion of Danisch says nothing about producing a smooth tape curve only about producing data that represents the geometric configuration. This geometric configuration could be just simple geometry such as positions, lengths and angles in a straight line type geometry as discussed in Danisch col. 9, lines 30-37 and shown in figures 1-4. It is only natural that Danisch would not teach how to produce such a smooth curve since Danisch is about the construction of the flexible substrate device itself and not about how to use the device.

In contrast, rather than produce such a simple geometric configuration representation, the present invention produces a "virtual" tape curve by "mapping" the relative positions

produced by the flexible tape input device (see claims 1, 6, 8, 10, 11, 16 and 32). Because a mapping occurs, the virtual curve may not correspond in size, shape and location to the parameters of the flexible tape input device. Because the substrate containing the twist and bend sensors of the Danisch device has limited flexibility and there is a spacing between the sensors of the substrate, it cannot be used to for sharp gradients. Because the virtual curve of the present invention is mapped from the tape input device positions, the mapped virtual curve can include such sharp gradients.

Claim 4 calls for the tape curve to be used to drag out a shape from an anchor curve. The Examiner points to col. 3, lines 29-33 in Danisch for this feature. As reproduced above, there is no mention of an anchor curve or of dragging in the portion of Danisch noted above. Danisch does not mention an anchor curve or dragging out a shape from the anchor curve using the flexible tape input devices elsewhere in the Danisch disclosure. It is only natural that Danisch would not discuss such dragging since Danisch is about the construction of the flexible substrate device itself and not about how to use the device.

The present invention in claim 11 (as well as claim 37) calls for the virtual curve to be a spline curve. That is, the flexible tape device outputs in the present invention are mapped to spline curve control points. The Examiner asserts that spline curves are well known. However, there is no teaching or suggestion in Danisch that the geometric configuration data representation of Danisch be a spline curve. Nor is there any teaching in Danisch of how convert the Danisch outputs into a spline curve. In particular, the Examiner does not point to any portion of Danisch that is alleged to teach using the tape positions as spline curve control points because there is none.

The present invention in claim 12 (as well as claims 34 and 35) calls for world position sensing/sensor of the tape input device to allow the curve to be three dimensionally positioned in a 3D scene. The Examiner points to column 3, lines 29-33 of Danisch for this feature asserting that there must be a sensor since the description describes finding the position of an object in space. The portion of Danisch referenced by the Examiner is noted above and it is merely a goal, object or wish/need list and does not teach or suggest how to provide such a world position. As described in the specification of the present application on page 5 a 3D sensor needs to be attached to the tape input device. Danisch describes nothing like this.

Claim 14 calls for a command input device in addition to the flexible tape input device and the curve generation system, that is, three devices. The Examiner alleges that the body movements of the wearer of the tape input device act as commands. That is, the tape input

device inputs the commands. In other words the Examiner compares the tape input device to the command input device. This is an inappropriate comparison since the claim already calls for a tape input device and a more relevant comparison of a body input movements device is thus to the tape input device of the present invention. Put simply, where are the three devices called for in the claim to be found in Danisch as the Examiner only points to two.

Claim 22 (as well as claim 35) calls for an editing system allowing "editing one of the curves". The Examiner points to Danisch at col. 3, lines 29-33 for this feature. As reproduced above, this portion of Danisch says nothing about an editing system. Nor does any other portion of Danisch. Again, this is a natural consequence of the Danisch reference providing information about the input device construction and not about how to use it.

Claim 31 calls for dynamically controlling curves in a dynamic scene. The Examiner points to Danisch at col. 3, lines 45-60 for this feature. As reproduced above, this portion of Danisch says nothing about dynamic curve control in a dynamic scene. Nor does any other portion of Danisch. As stated previously, this is a natural consequence of the Danisch reference providing information about input device construction and not about how to use it.

Claim 33 calls for subsection sensors allowing the curve to correspond to that subsection. The Examiner points to Danisch at col. 3, lines 45-60 for this feature. As reproduced above, this portion of Danisch says nothing about subsection sensors and Danisch says nothing about subsection sensors that allow the curve to be based on the subsection.

Claim 36 emphasizes the twist information of the Danisch device and additionally calls for six degree of freedom information. The Examiner points to Danisch at col. 3, lines 45-60 for this feature. As reproduced above, this portion of Danisch says nothing about this feature.

Claim 38 calls for controlling a spline curve using the flexible tape. The Examiner points to parts of Danisch for features of this claim other than the control feature and, in particular, points to nothing in Danisch concerning the control feature. As discussed above, nothing in Danisch teaches or suggests this.

Claim 39 calls for a spline curve being manipulated in a scene responsive to the tape input device. The Examiner points to Danisch at col. 3, lines 45-60 for this feature. As reproduced above, this portion of Danisch says nothing about manipulating a spline cure with the tape input device much less in a scene. Danisch says nothing about such spline curve manipulation.

Claim 40 calls for two-handed manipulation of the flexible tape. The Examiner points to Danisch at col. 3, lines 45-60 for this feature. As reproduced above, this portion of Danisch says nothing about using the hands at all much less doing so with two hands to produce a virtual curve as called for in the claim.

It is submitted that the present claimed invention of the independent claims, patentably distinguishes over Danisch and withdrawal of the rejection is requested.

The dependent claims depend from the above-discussed independent claims and are patentable over the prior art for the reasons discussed above. The dependent claims also recite additional features not taught or suggested by the prior art. For example, claim 5 calls for interpolation between the anchor curve and the tape curve. Danisch says nothing about interpolation between curves. It is submitted that the dependent claims are independently patentable over the prior art.

It is submitted that claims 15, 18-21 and 24-20 continue to be allowable.

It is submitted that the claims are not taught, disclosed or suggested by the prior art. The claims are therefore in a condition suitable for allowance. An early Notice of Allowance is requested.

If any further fees, other than and except for the issue fee, are necessary with respect to this paper, the U.S.P.T.O. is requested to obtain the same from deposit account number 19-3935.

Respectfully submitted,

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Date: 7/14/4

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